

**ABSTRACT OF THE DISCLOSURE**

A re-targetable communication system is disclosed. In one embodiment, the system includes a connectivity unit, a digital signal processing core that is coupled to the connectivity unit and a number of scaleable functional units that are coupled to the connectivity unit. The scaleable functional units have been optimized to execute mathematically intensive operations. Each of the units further includes a local memory, a bus controller and a number of removable complex arithmetic elements (hereinafter CAE) that are coupled to one another, to the local memory and to an inter-CAE bus. The bus controller is coupled to the inter-CAE bus and to the connectivity unit.